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• ENVIR NMENT

The Citizens' Bulletin of the Connecticut Department of Environmental Protection



The Long Island Soundkeeper
tells it like it is.

October/1989

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Cover photo by Robert Schneiders

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Editor's Note

The best of times, the worst of times. We are, most would agree, right now in a period of global environmental crisis. What we do or don't do now will determine the kind of world that we will leave our children.

In times of adversity, however, people tend to rise above themselves. Uncommon valor becomes common. Heroes appear. People see a tough job that has to be done, and they just do it.

Terry Backer, the subject of our lead story this month, is one such person. He sees something that has to be done, and he takes action. He is not the only one. Recently, I attended a household hazardous waste collection day in Southington. It was a hot, muggy, itchily uncomfortable day. It was not the kind of a day you would ordinarily choose to sit in long, long lines, starting and stopping your car, waiting to hand over a few cans of smelly stuff that you could much more easily have tossed into the regular garbage. Six hundred people did just that. Six hundred people saw something that had to be done, and did it. Six hundred people, whether they were aware of it or not, were operating on the heroic level.

I will admit that from time to time I get a little edgy about such things as the condition of this planet. On the other hand, there *are* heroes out there. Keep your eyes open. You'll see them.

Connecticut Environment has been chosen to be part of the Connecticut State Museum of Natural History membership package. That is a great honor for us. To our many new readers, then, we say welcome — we hope you enjoy our magazine.

R.P.



Long Island Soundkeeper Terry Backer is the eyes, ears, and conscience of one of Connecticut's most precious natural resources. (Photos by Robert Schneiders.)

An Interview with the Long Island Soundkeeper

(Terry Backer is the Long Island Soundkeeper. He is a colorful, fascinating, articulate, no-holds-barred kind of guy. He is somebody who is capable of changing the way people think. The following interview took place in Norwalk, in August, 1989, and was aired on the television series, Environment.)

CE: Terry, thank you for having us today on the deck of the *Esmerelda*.

TB: I'm glad you could make it down.

CE: The first question I'd like to ask you is, what is the Long Island Soundkeeper and what does he do?

TB: That's a tough question to answer because I'm in the process of defining that job. I'm the first Long Island Soundkeeper, and the way I see it is I fill an ambient position — I go where I'm needed. I work for the Long Island Soundkeeper Fund and my job, in a nutshell, is to protect the biological integrity of Long Island Sound. Now, I can snap that off in a nice little bite but when you stand back and look at it, it takes in almost every dimension of our lives.

CE: Is the Long Island Soundkeeper Fund a private fund or a state agency?

TB: The Long Island Soundkeeper Fund is a privately funded organization. It is directed by a board of directors from a diverse segment of our community. I'm one of two employees. My job, as I said, is to go where I'm needed if there's a pollution source or something threatening habitat. Part of my job is to actively patrol Long Island Sound and seek out the places where sources of pollution are and deal with them.

CE: So this organization cares about Long Island Sound's problems and works to do something about them. Is that the bottom line?

TB: Yes and no. I think that in some way Long Island Sound affects us all, no matter where we live. I'm really in place to be the eyes and ears of the public and to add a voice to Long Island Sound.

CE: It sounds like what you are is the conscience, as well as the eyes and ears.

TB: Yeah, I think so. You need to translate something that's part of a natural resource into a human concern in Hartford, Albany, and Washington. We certainly provide input to all those bodies.

CE: So, if there's a problem with pollution, you'll be there to call it to the attention of people in a position to do something about it?

TB: Oh, yes, most definitely. Locating sources of pollution is a big part of my job. Sometimes it's not enough, just to call it to the attention of people who can do something about it. It's seeing if they have the resources to do anything about it. We're talking about astronomical cost. Let's just take one element — sewage. Astronomical cost to deal with the

sewage discharge problems into the Sound. Often times you go to the state of Connecticut or New York and say; "Hey, you guys, you've got to clean up your sewage." And they say, "We know, but it's a six billion dollar process and the money isn't there in these deficit years." Sometimes it takes even extending that and going into influencing the Legislature through things like this interview, saying we've got a problem, it affects us all, we've got to deal with it — and you guys have got the purse strings.

CE: So increasing public awareness is one of your goals.

TB: I think increasing awareness certainly is one of our goals, but I think enforcement is our major goal.

CE: Can you articulate basically what the end result of the mission you're trying to accomplish is?

TB: (*Laughs.*) To put ourselves out of work. No, I'm serious — there really should be no need for this, for what it does. But, there is. Take George Bush. During his election campaign, he stood out and hollered for a thousand points of light. The Long Island Soundkeeper Fund is one of those thousand points of light. The government doesn't have the resources to adequately patrol and protect our environment. Citizens' organizations need to be in place. They need to be professional and streamlined and help out with this charge. I'm not trying to be dramatic but it's nothing short of a life and death situation. When I say long-term, I'm not talking about 300 years. I'm talking about the future of my three-year-old child. My job is to fight the holding action so that as society's values change, there will be something there to administer.

CE: You fight this holding action on a full-time basis. Is this what you do all the time?

TB: For the most part. My family background is fishing. I'm an oysterman and a lobsterman. My dad fishes, my grandfather fished. So, we've had more than your normal relationship with the water. It's provided for our family in numerous ways.

CE: What I'm getting at is this. Why do you feel that you should spend so much of your time and energy addressing this problem?

TB: I'd like to tell you, "Oh, I love the Sound and I love the sea," and all those things, but it's really something I can't put my finger on. It's part of my collective existence. I was born into it. I'm here. I'm a little bit a part of it; it's a little bit a part of me. I have two children who I would like to have enjoy either a working or recreational relationship with it. I think that's really where it comes from.

CE: So, if the Sound hurts, you hurt?

TB: Yeah, I think so. I think so.

CE: Could you briefly assess the health of Long Island Sound right now?

TB: We've had some very serious problems in the Sound. I'm often asked which is the biggest problem? My response is almost always, "I can't tell you because the problems of Long Island Sound and the forces that degrade it are much like puzzle pieces." You need all of the pieces to get the whole picture. That's what we're dealing with here. Certainly sewage contamination in the Sound is at an all time high. It's easy to say that's because we've got more people than we've ever had. Marshland lost to development is another big problem. We have a public trust resource administered pretty much by the state of Connecticut and the federal government; it belongs to each and every one of us. There are a lot of social pressures for the use of that body of water that have never been clearly defined. We need to evolve our coastal management legislation with the needs of the trust. They are worrying about the needs of society rather than the needs of the Sound.

CE: I'd like to ask you about the marshland that you just mentioned. I know you feel it's a very critical point in the ecology of the Sound. Why is that?

TB: Almost all of us learned in eighth or ninth grade about the food chain and where it comes from. Big eats small and it gets to the point where we eat it. If you look at Long Island Sound, you realize that all its life force, the feeding and breeding grounds, all begin in the grasslands and mud flats that are around its shore. When we arrived from Europe as Colonists, we immediately started filling marshlands. Even when we had 3600 miles back to the Pacific, we were filling marshes back towards England. It has historically continued even till today. We've lost approximately 70 percent of our marshlands here in Connecticut. We can't determine how much of the intertidal flats we've lost because it was never mapped. This process is continuing today, despite the rules and regulations we have put in place to stop it. It hasn't stopped it. I often make this comparison — the marshland is to the center of the ocean as the tropical rainforest is to the desert. The marsh is where the life of the ocean starts from. It's the beginning of the food chain. The ocean and oceanic life simply don't function without the marsh. The marsh serves to take out pollutants and oxidize them. It supports tons and tons of life. It really is what makes the ocean tick, what makes it work.

- CE: People may not be aware of how rich and significant the shellfishing industry is in Connecticut, particularly in Norwalk. I'd like to ask about this long tradition of shellfishing in Connecticut.
- TB: Well, as you know -- or you might not know -- Connecticut has well over a 300-year history of shellfishing. Some of the first rules and regulations concerning the environment were shellfish regulations. In Fairfield, in the early 1700s, there were laws limiting the number of shellfish residents could pick up off the beach.
- CE: Even then people were looking at that.
- TB: That's right. It was a prime food source. If you want to go back before that, in the Indian diggings in the area, we find a tremendous amount of oyster shells. It was a staple part of the native Americans' diet all along Long Island Sound. The history of oysters as a food source -- and a renewable food-source at that -- goes beyond recorded history.
- CE: It's an unbroken tradition, 350 years or so of this industry?
- TB: Yes, and up until about 150 years ago, it was very much a hunting and gathering trade. Today, and actually for the last 150 years, it's been actual farming of Long Island Sound. Oysters are caught, seeded, moved, and transplanted, and go through all different phases before they get to plates. A lot of people say if you want a good Connecticut oyster, go to San Francisco. The inference there, of course, is that it's a major export product for Connecticut and Long Island Sound, and indeed it is.
- CE: Could you explain the process of fish farming and how this is a renewable resource?
- TB: It's a renewable resource, like most natural products are. The animals are very prolific. One large oyster can produce 100 million pieces of spawn. This spawn goes into the water, swims around, and around two or three weeks later sinks to the bottom. By then, the oysterman has prepared a bed for them to land on. He puts down oyster shells, known as culch. They attach themselves and start the growing process so that they may reach the plates and cans about five years later. Shellfishermen are unique in that their harvest and their attitude towards the Sound is one of a long term commitment. It's not something they're there for today. In many cases, businesses and families have been at it for 150 years nonstop.
- CE: How many people are employed by this industry right now?
- TB: There are literally hundreds in the state of Connecticut. I'm a natural growth oysterman. I work the public beds. I catch seed, the small oysters we were talking about, and sell it to shellfish companies. Connecticut realizes an economic rollover of about 70 million dollars a year from the shellfish industry. Probably seven million a year in the related service taxes and food taxes. We're looking at a major economic force in the state of Connecticut. If we had a company that would make 70 million a year, provide seven million a year in taxes, supply hundreds of jobs, not to mention land taxes, we would encourage them to come here. Here we have an industry that's in place. All it needs is clean water and a place to tie its boats and it will last indefinitely.
- CE: Would you describe how this industry reflects the health of the Sound? When the water's not clean, what happens?
- TB: You can't market shellfish. There are a series of safeguards that protect the public health. The aquaculture division of the Department of Agriculture does water testing and meat testing. If you're in an area of the Sound that produces the oysters, which is pretty much from New Haven down to Greenwich, you will see that they are ever present in their job. Water quality is not only directly related to what we dump in from sewage treatment plants, but to what we take out of the Sound as well. We've been talking about mud flats and marshes. They provide a natural degree of purification. They break down ammonia and other toxins. What you need to understand is that mud flats and marshes are God's natural treatment system. He put them there to deal with natural pollutants. Every time we take those away we wind up having to pay for them.
- CE: You've talked about the appropriate use of the Sound as well as the inappropriate. What does that mean?
- TB: Certainly recreation is appropriate. But there are also commercial uses of the Sound. Many of the industries use the waters of the Sound as a place to dump waste. I don't consider that appropriate. If you look at the shellfish industry and the fishermen, it's extremely appropriate. They don't tie up the water column. There's not much of an encroachment on it and it's a renewable resource.
- CE: Do you foresee some sort of balance between the social use, the recreational use, and the industrial use of the Sound?
- TB: The Coastal Management Act of the state of Connecticut certainly contemplates balancing of the

social competition for the use of the water. But there's one place we can not balance. We cannot take a development interest and talk about balance against the environment. They constantly reassess how much nature gets and how much we get. Nature's piece gets smaller each time and it's to the detriment of all the users of the Sound. The word balance applies to our sense of fair play and our sense of equilibrium. When, in truth, nature doesn't care about our sense of equilibrium and our sense of fair play and who makes what. It only functions according to its needs and its needs are natural habitat.

CE: What you're saying is the balance is already there and the question is whether we respect it or not.

TB: The balance was there. We are going to pay big time in effort and dollars to help the Sound reestablish that balance.

CE: Some of the islands in Long Island Sound are semi-protected. Yet, people do come and visit them, and they do bring their garbage from time to time. What's your feeling about that?

TB: It's like so many things. You're torn between two sides of an issue, two edges of a sword. Certainly at times when I look at a bunch of trash or water quality dropping because of sewage discharge of vessels, I say that no one should be allowed on them, and then I remember that it's part of the public trust. It belongs to all of us. People really need to come here in order to understand it and protect it and to improve it. So, my sense is that people should come and be welcomed, but they should come as part of nature. They shouldn't bring their contraptions and their garbage, but come and enjoy nature for what it is. So many people come and behave inappropriately and actually degrade what they came here to see, and that's tragic.

CE: You seem very tolerant of the fact that people aren't as sensitive to the dynamics of nature that you see, and yet you do want them to learn, you want them to grow. Is this part of your message?

TB: Well, it's not like we can move to another planet. We all have to share this and, indeed, as public trust it belongs to all of us. People must understand that the way we have lived our lives for the past 100 years is not the way we can live them anymore. We must become in tune to the system -- what's left of it -- and enhance it. How can you do that if you say, "Stay up in Litchfield, don't come down"? What they do affects the Sound. It affects Connecticut economy and that just goes on and on like a domino effect.

CE: So it's not necessary to be the owner of beachfront property to have a stake in Long Island Sound.

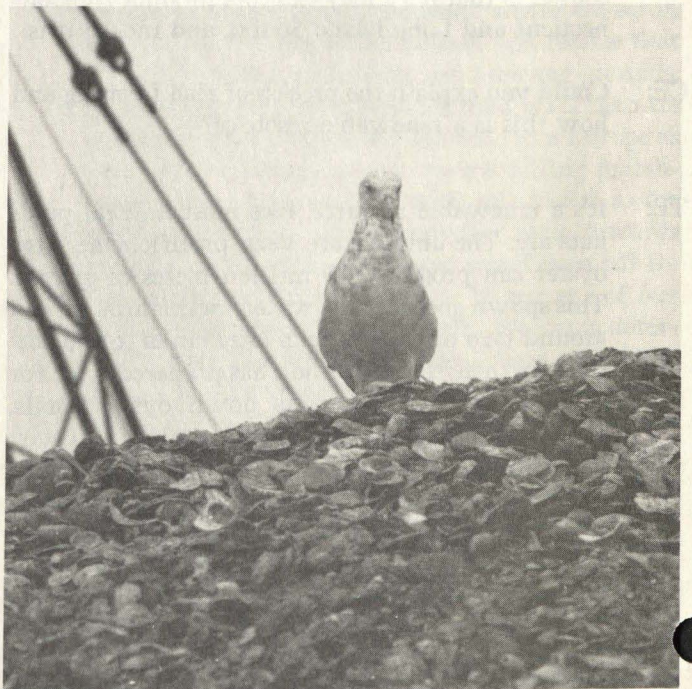
TB: Certainly not. On the other hand, it's not necessary to live within 100 miles of the shore to help degrade it.

CE: Can you talk about what you feel is your responsibility to this planet?

TB: Let me see if I can sum it up this way. Seven years ago I was working in Alaska. I came back to Connecticut in Norwalk and went out in my dad's lobster boat. As we headed down the river in the mid-'70s, I said, "Hey, Dad, look at this sewage in the water. This place has really gone down hill since I left." He looked at me and said, "You should see it from where I stand." What dawned on me is that each generation bears some responsibility. In the beginning they did it out of ignorance, today we behave out of arrogance. Nature tolerates neither ignorance nor arrogance. It will shake us off its back like fleas from a dog. I thought about that and my children. There is a moral issue here. We borrow our environment from our children. For me, this is a spiritual sense. It is an obligation to be a good spirit of the planet. I feel very connected to it.

CE: Let me just say on behalf of the people of Connecticut, and perhaps the planet, thanks for sharing that vision of things and thanks for what you're doing.

TB: Thank you. ■



The history of oysters as a renewable food source goes back before recorded time.



Master Composter Robert McNeal has great success in home composting.

Turning Over an Old Leaf

Text and Photos
by

Robert Schneiders
Environmental Intern

THE DISPOSAL OF SOLID WASTE is a critical problem in Connecticut. Currently, 40 of the 70 permitted landfills in the state are near or at full capacity. Many of the remaining landfills are small in size and will not tolerate the unchecked disposal of recyclable solid waste.

In 1987, the Connecticut General Assembly passed the Mandatory Recycling Act, designed to reduce the flow of solid waste to landfills and incinerators by 25 percent. Regulations were later adopted by the DEP toward achieving this goal. These regulations identify nine items, including leaves, which must be recycled by January 1, 1991. After this date, recyclables, including leaves, grass, newspaper, etc., will be banned from disposal at landfills and from burning at incinerators.

Currently, leaves account for an estimated five to 10 percent of the net annual flow of solid waste in Connecticut. Leaves take up valuable space in landfills and do not burn well in incinerators and resource recovery plants.

ONE PRACTICAL ALTERNATIVE to waste disposal is leaf composting. Composting is a controlled and managed process of aerobic decomposition that occurs through the natural breakdown of organic material by

macro and microorganisms. In less than a year, with a properly maintained environment, these organisms can reduce the size of a leaf pile up to 75 percent while producing a beneficial product.

Compost is an excellent soil conditioner. When mixed with clay, it acts as a soil lightener and when mixed with sandy soil it acts as a water retainer. Often it is used as a mulch around shrubs, trees, and gardens. It is possible to enhance the growth of indoor or outdoor plants by the use of compost.

Leaf composting can be performed on two levels: large scale, such as by a municipality; and smaller scale, on an individual basis. Kathy Alexander, the DEP's recycling program compost coordinator and specialist, is working with municipalities throughout Connecticut to develop and implement leaf composting programs. Composting sites will be able to handle many thousand cubic yards of leaves. Alexander states that the most effective way of composting such large quantities of leaves is called the "wind row" method. Leaves, sometimes shredded, are placed in huge rows and watered. As the microorganisms do their work, heat is generated, causing the center to reach temperatures of up to 140 degrees F. Optimum com-

posting conditions are maintained through constant temperature monitoring. When the time is right, the piles are turned with a payloader and watered again, thus providing oxygen and moisture to the organisms and allowing them to continue their work. The insulation provided by the leaves and compost on the exterior of the row allows this process to continue throughout the coldest winter months. As a result, an entire community's leaves can be processed before the next fall. Compost produced at these sites will be provided to residents and landscapers who wish to use it. Municipalities would also use it in places such as parks, schools, and along parkways.

HOME COMPOSTING IS ANOTHER METHOD of recycling leaves which is becoming more popular. Besides making compost more readily available for personal use, this process saves the community tax dollars in avoided disposal fees, and it allows the home composter to control the type of compost he or she desires.

Last year, the DEP Recycling Program funded a backyard composting pilot project in conjunction with The University of Connecticut Cooperative Extension Service. Robert McNeal, coordinator of this "Master Composter" Program, is a master composter and an organic gardener. He has conducted public seminars in home composting. He has had such great success using compost in his garden that he even takes his neighbors' leaves and composts them.

Composting at home, the way McNeal does it, is very easy, requires about five minutes a week, and produces no bothersome odors whatsoever. McNeal starts with a composting bin. Composting bins come in all shapes and sizes. Most people build their own to match their taste or house. However, bins can be purchased through any garden store.

Although he has experimented with many shapes and sizes and has obtained excellent results with all of them, McNeal builds bins inexpensively out of discarded shipping pallets which he finds at his local landfill.

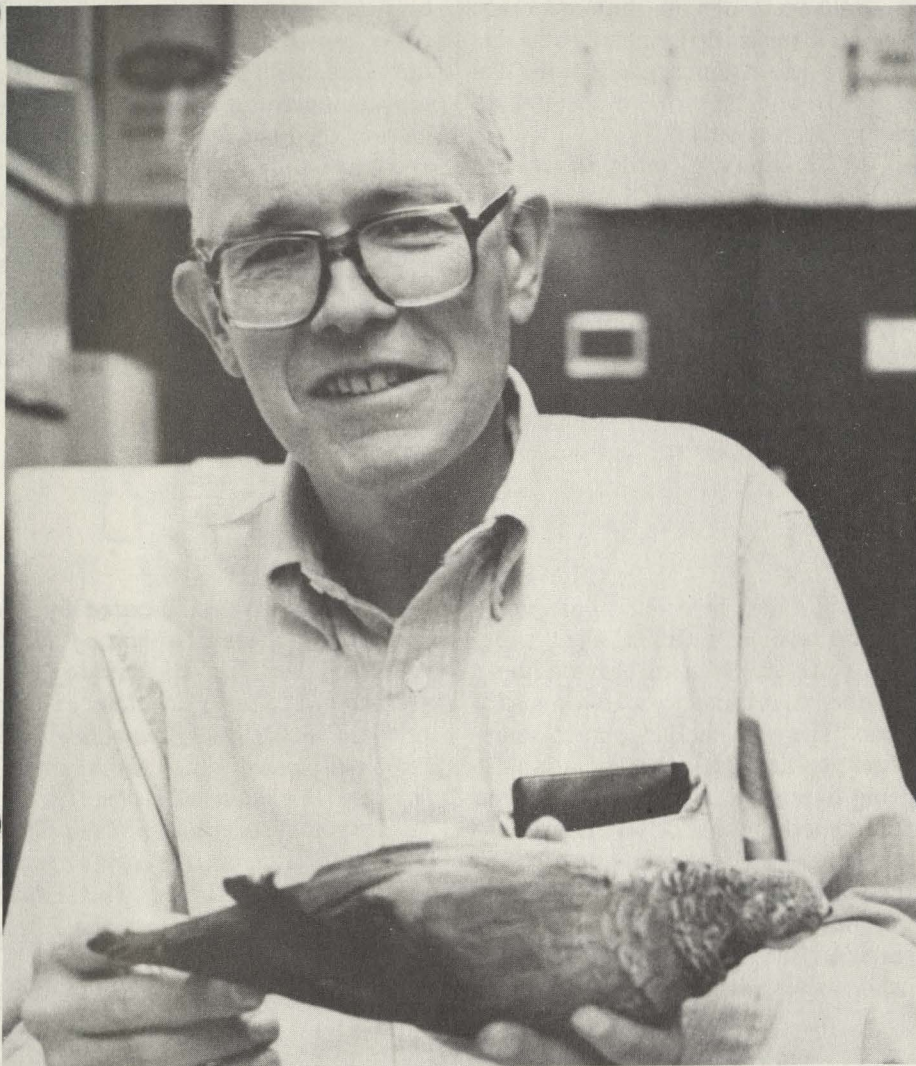
The next step is to rake and shred the leaves. McNeal uses a shredder because that is what he has. A lawn mower will accomplish the same task if the leaves are blown into a bag or against a wall or board. He then rakes the leaves into the bin and waters them until they are about as wet as a damp towel or sponge. He also adds any garden waste — lawn trimmings and organic waste from the house, such as carrot and cucumber peels, coffee grounds, and leftover vegetables. These are sources of nitrogen, which enhances the process. It is important *never* to add fat or meat scraps, as these will attract animals. Then, once a week, McNeal pokes holes in the compost pile with a broom handle, pipe, or pitchfork to allow oxygen to enter. Oxygen is very important to maintain an odor-free compost pile. Within a few months, he has a finished product which is ready to beautify his garden.

CONNECTICUT IS RIGHT NOW in the process of addressing the problem of solid waste. Recycling leaves through composting on both the municipal and the home level will be a major contribution to the battle. The support of an environmentally conscientious public is very important to make sure that municipal and home composting programs work and continue to grow.

For further information, please write: DEP Recycling Program, 165 Capitol Avenue, Hartford 06106. Brochures on home composting are available for 30 cents by writing: Cooperative Extension Service, University of Connecticut, College of Agriculture and Natural Resources, 1376 Storrs Road, U-36, Room 205, Storrs, CT 06286. ■



Composting is done on the individual level and, as shown here, the municipal level.



Connecticut State Ornithologist George Clark, Professor of Ecology and Evolutionary Biology at the University of Connecticut, holds a preserved specimen of the Carolina parakeet, which is now extinct. The bird is one of 10,000 in the outstanding bird research collections at UConn.

The Man to Ask about Connecticut's Birds

by

Lisa Marcinkowski

Writing Intern

The Connecticut State Museum
of Natural History
and the UConn Department of
English

HE HAS DODGED shotgun pellets, navigated precarious cliffside roads, plunged into a marshy lake, been stranded in a tidal mud flat, flown all

over the world, and worked in the midst of venomous Australian snakes, all for science. This is not Indiana Jones, but Professor George A. Clark

Jr., the Connecticut state ornithologist.

The office of state ornithologist was created in 1907 by the Connecticut General Assembly. The position is to be held by a faculty member of The University of Connecticut. The state ornithologist studies the food habits and status of all species of birds in the state. The position receives no special funding.

Clark, a quiet bespectacled man, whose ties are often bright with pictures of tropical birds, smiles at the dashing adventurer image. However, it is clear that the willingness to endure serious hardship in his pursuit of knowledge demonstrates the depth of the UConn professor's dedication.

Clark, who earned his doctorate at Yale, is a leading authority on the anatomy of birds and their relationship to the environment. He concentrates on adaptations — ways in which birds specialize in structure and behavior to meet specific environmental challenges.

"Ornithology today is wider in scope than it was previously," says Clark. In the past, ornithology involved physical descriptions of birds and their natural history; today, it involves electron microscopy, biochemistry, and DNA fingerprinting. Today the ornithologist must have a global perspective. For Clark, ornithology is like a multi-dimensional jigsaw puzzle that "has many directions that it can take." New discoveries can lead to an endless chain of new questions.

The state ornithologist receives many calls from people with bird problems. In Fairfield in the spring of 1988, 17 snow geese suddenly dropped out of the sky, dead. Nothing specific could be discovered through autopsies. The birds may have died from a wind shear, but there are no previous examples to test that hypothesis. Clark is still trying to figure out what happened.

BIRDS HAVE BEEN AROUND for 135 million years. Eighteen thousand years ago, all of our modern birds had already evolved. The last 400 years in Connecticut have seen dramatic

changes in the landscape, but we have records on the birds for only the last 150 years.

"The way we develop our landscape — chopping it up without concern for the wildlife — can be devastating to birds," he said. "Birds require a minimum area for their territories — a certain number of trees located contiguously, for example. Although a new housing development may look wooded, the insertion of houses changes the environment radically," Clark explained. Homes bring more predators, such as house cats. Also, other competing species may come in. With dense suburbanization may come an increase in the total weight of birds, but with only three species present — starlings, house sparrows, and pigeons.

Periodically there are major die-offs of birds. Birds may then serve as monitors of environmental conditions, specifically regarding the use of chemicals. "In Connecticut, lawn chemicals have caused major die-offs in birds as well as insects, and those chemicals can get into the ground water we drink," he said.

THE STUDY OF BIRDS has other implications for people; for example, Lyme disease may be spread by migratory birds carrying the deer tick.

Clark recently helped to create a checklist of Connecticut birds. What started as a "bare bones assessment of the status of the birds," provides a necessary basis for more in-depth studies which are now under way.

ONE OF CLARK'S AREAS of expertise is bird feet, the details of which are unique, like fingerprints of people.

He is also studying bird teeth. "They resemble large shark's teeth. At least, that's the way insects see them," says Clark. "Birds do not have true teeth, but rather structures of hardened skin in the bills."

Clark is endlessly fascinated by the behavior of birds. "Relative to people, birds have small brains and little nervous tissue," says Clark, "but they

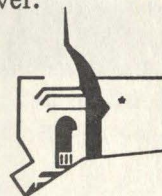
do so many things that humans can't. They can see in ultraviolet light; some migrate tens of thousands of miles every year; and they orient themselves partly by magnetism."

In his study of birds, Clark has been all over the U.S., Australia, Africa, and Europe, and has encountered such creatures as lions and boa constrictors in his international birding forays. In pursuit of birds along a narrow cliff track in the Cascade Mountains of Washington state, Clark found the spots where previous travelers had been swept to their deaths by avalanches.

CLARK IS OCCASIONALLY surprised by a new behavior from a well-known bird. It is this kind of thing that motivates him to brave adverse weather conditions to watch his subjects. "There's a challenge in it. Sometimes you have an idea of what you're going to see," he says, "but often you find something that doesn't fit preconceived ideas." For example, in 1989 on the waters off southern South America, he saw a giant petrel, a large seabird, floating on the sea in a previously undescribed and entirely unan-

ticipated posture. When Clark conducts research he goes out with a fairly specific idea to be tested. If a bird demonstrates an unanticipated behavior, then the idea must be revised and a whole new series of questions must be answered.

"I consider our present knowledge about birds and evolution to be extremely primitive," says Clark. "Although we have lots of records, anyone can easily ask a question that we can't answer."



This article was contributed by The Connecticut State Museum of Natural History at The University of Connecticut in Storrs, which exhibits mounted birds of Connecticut, the largest mounted white shark on display in the eastern United States. "Videoplacement" interactive video, Indian artifacts, and offers programs for teachers, children, and adults. For information, contact the Museum, UConn Box U-23, Storrs, CT 06269-3023; phone (203) 486-4460. ■



Connecticut State Ornithologist George Clark of The University of Connecticut (right) and others watching birds along the Rhode Island coastline during a cold, windy day when the highest temperature was 15 degrees (F). (Photo by Matthew Perkins.)



Students from Putnam explore the woods and participate in a water lesson at Ragged Hill Woods. (Photos: R. Paier)

A Visit to Ragged Hill Woods

by
Donna M. Dufresne

THE WINDHAM-TOLLAND 4-H CAMP is quiet in the early morning. The clouds are beginning to break up and the sun is filtering through the haze. It has rained a lot this week, but today looks like it will be just fine. Veils of steam waft up from the newly unfurled ferns and the sun promises a warm day at Ragged Hill Woods. Soon, the tranquil sound of tree sparrows and the kingfisher's rattle will be disturbed by a familiar rumble.

A yellow school bus rounds the bend, bearing 15 fifth grade students from Mr. Paul Ferron's class in Putnam. They tumble out of the bus, buzzing with excitement, loaded down with lunches and extra clothing in case they get wet.

These students will participate in a water lesson called, "Water-Where-Abouts." They will discuss water quality and use, and explore the water-shed map for Con-

necticut. After they are familiar with how brooks and streams drain into the river basins, the students will explore the brooks at Ragged Hill Woods (Windham-Tolland 4-H Camp), and search for aquatic life. The mystery of water (always of interest to kids) will become somewhat dissolved as students become acquainted with dragonfly nymphs and cadisfly larva, and explore the inter-connected life-cycles which revolve around the waters edge.

RAGGED HILL WOODS 4-H Environmental Education Program has provided Windham County schools with quality outdoor education since 1976 when it was introduced. In September of that year, school children from Brooklyn, Canterbury, and Killingly began to study the environment first-hand on field trips to the Windham-Tolland 4-H Camp in Pomfret. The program began as a Title IV Grant submitted to the Connecticut State Department of Education by Louise Barry on behalf of the 10 towns.

Early on in the environmental education movement, RHW provided a unique education opportunity for elementary school children, classroom teachers, and student teachers from Eastern Connecticut State University. What is unique about RHW is the participation of students from the University. This was initiated when Otis Curtis, the extension agent for Windham County at that time, approached Dr. Charles Prewitt of the University. He proposed that students participate in the program to enhance their teaching abilities in science and the environment. During the second year of the program, Eastern Connecticut State University required that all students majoring in elementary education participate in the RHW outdoor-education program for one week. This gave teachers-to-be the opportunity to work with small ratios of children in an outdoor setting, and gave them exposure to the methods of "discovery-learning," and experiential education. To meet the needs of student-teacher supervision and curriculum development, RHW hired a full-time director, and the program began. Windham county schools caught on to the successful approach of enriching classroom curriculum.

The experiential model in environmental education was used from the start to teach more than science. Language arts, history, social studies, and math can be incorporated in the outdoor classroom. For 13 years, RHW has remained committed to sharing this knowledge with classroom teachers as well as students. Classroom teachers are invited to teachers' workshops hosted by RHW staff and other professionals. The student-teachers receive a full day training on Mondays before they work with children in the field. They work closely with the RHW staff to learn and grow from their own experience.

From the beginning, RHW has been a cooperative venture. It has survived through the help of many organizations, including: the University Extension, and the 4-H Foundation; The Nature Conservancy (use of the Dennis

farm); Soil and Water Conservation District; and Windham County schools.

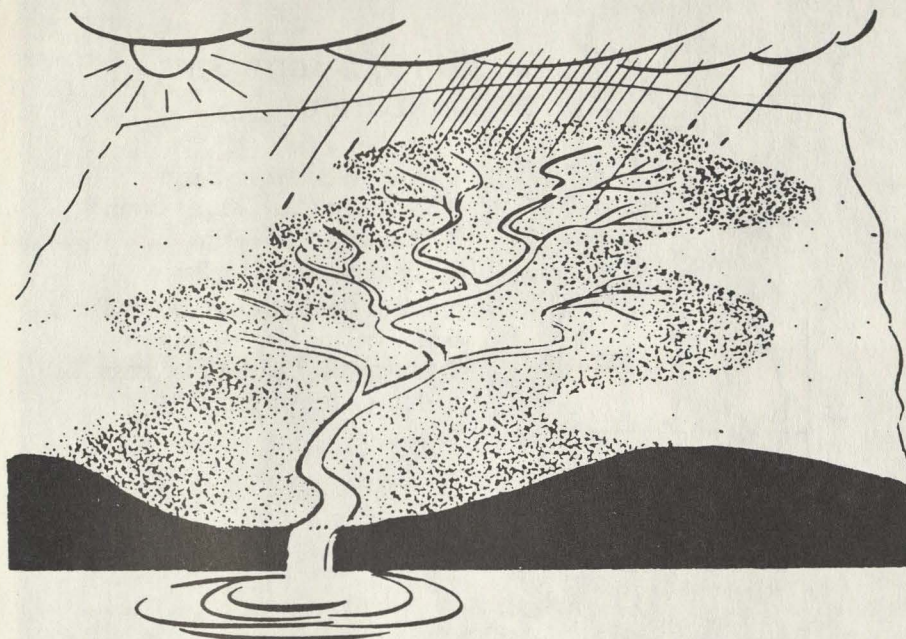
WITH ENVIRONMENTAL DANGER INCREASING every day, the critical nature of environmental education becomes more evident. The children of tomorrow can no longer afford to be ignorant of cause and effect relationships. We need to understand our relationship to the earth as one of stewardship. At RHW, students of all ages — staff included — learn about respect for the earth, and each other. They learn that life has requirements and order and diversity. They learn that all life is interdependent and has relationship. But most important, they learn stewardship and that what one person does makes a difference.

For further information, write: Ragged Hill Woods 4-H Environmental Program, 139 Wolf Den Road, Brooklyn, CT 06234; or phone (203) 774-9600 or 974-1122. ■

(The author is acting director of Ragged Hill Woods.)



First-hand field trips are important in teaching environmental awareness.



Schematic of a watershed. Any ridge, or even rise in the landscape, is a boundary division for the falling rainwater that flows downhill.

On the Dynamics of the Drainage Basin

by

Alan Levere

Senior Environmental Analyst

RECENTLY, I WAS MUSING on which of our natural resource maps is the most valuable. The thing that swayed my decision is water. It fascinates me. I see flowing water as the single factor which most determines the character of our state.

When we understand the boundaries that limit where water will flow, we understand where pollutants will flow when spilled, where sediment from erosion could end up downstream, and so on.

This month, then, we will take a look at drainage basins/watersheds.

WHEN YOU LOOK AT A MAP of the western United States, you see the

Rocky Mountain range run north from New Mexico, Colorado, Wyoming, and into Montana. There is a line that runs along the crest of this great mountain range with a name you have probably heard before — the Continental Divide.

At this divide, when rain falls on to the crest of the ridge, half flows down one slope to the east, draining ultimately into the Atlantic Ocean. The other half flows down the western slope, draining ultimately into the Pacific Ocean. It's pretty straightforward.

The Continental Divide is a drainage divide — it is the dividing line between water that drains in one direction and water that drains in another. In the Rockies, this is easy to see. The high ridge forms the division of water flow. But such divisions don't need to be as high or as rugged as the Rocky Mountains. Any ridge, or just a

rise in the landscape, is a boundary division for the falling rain water that flows downhill.

Most of the water that is shed down the eastern slopes of the Rocky Mountains in Colorado ends up leaving the state, flowing east in either the South Platte River or the Arkansas River. Both of those rivers flow east across the plains states. Their waters ultimately flow out (drain) into the Mississippi River. For the most part, these two rivers flow in the same direction (east), to the same destination (the Mississippi River). They flow parallel, though several miles apart, for hundreds of miles. Why? No doubt because there is a rise in the landscape between the two rivers that keeps each from the other.

WE HAVE A SIMILAR SITUATION right here at home. Picture the Connecticut and the Housatonic Rivers. Both rivers meander from north to south into Long Island Sound. They flow roughly parallel to one another without converging. Why do they remain separate? Mostly because there are hills between them.

To the east of the Connecticut River the Thames River has the same situation. The reason the Connecticut and the Thames don't converge is that there are hills between them. In fact, the boundary or divide that limits which water drains into which river is the surrounding hill tops.

TAKE A LOOK at the Major Drainage Basins in Connecticut in Figure 1. You can see that Connecticut is part of eight major basin systems that include six states other than ourselves.

What exactly is a drainage basin, or watershed, as it is also called? It is all the downslope area that literally sheds water off the hillsides and into the watercourse at their base. It is called a basin because the hills that shed the water form a ring around the river, like the sides of an elongated bowl.

The best drainage basin analogy I

know of is a bath tub with the shower on. (A little odd maybe, but follow the logic.) The sides, front, and back of the tub represent the landscape — the hillsides around the basin. The shower is the rain.

As the 'rain' falls, it runs down the sides of all the boundary hills (sides of the tub) in many little streamlets. All of these little streamlets flow down the sides and converge on the bottom of the tub to form a major stream. This stream then flows to the lowest point where it drains out.

In fact, every river that you know of is lying along the bottom of its own 'tub' with the local hills as the tub sides and the river flowing at the foot of the hills.

It is difficult to envision this on the landscape. But it should be clear that you and the river are downslope of the hills, and that the water is flowing past you to the lowest point in the basin — the mouth.

If you walk away from the stream, in a line perpendicular to the main flow, you will go uphill. When you get to the top of the hill and start down the other side you have entered another drainage basin. It is the hills that separate one watershed from the next.

In Connecticut, mapped drainage basin/watersheds are broken down into three types:

Major basins are named for the main stem or principal rivers in the area: Connecticut, Housatonic, Thames Rivers, etc. Also, those large triangular areas between the mouths of main stem rivers which typically have no dominant drainage main stem, but several more-or-less straight flowing, lesser sized rivers. (These are major basin numbers 2, 5, and 7, as shown in Figure 1.)

Regional basins are named for the largest tributaries, or non main stem rivers, completely within the major basins. The Shepaug, Farmington, Willimantic, and Quinnipiac Rivers, for example.

Subregional basins are those of lesser tributaries to the largest tribu-

taries of the major basins. The Bantam River flows into the Shepaug, which flows into the Housatonic; the Pequabuck flows into the Farmington, which flows into the Connecticut; the Hop River, which flows into the Willimantic, which flows into the Thames, and so on.

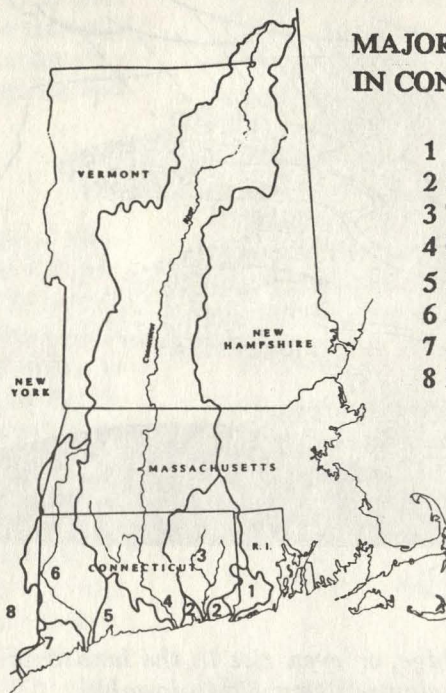
AN IMPORTANT PRINCIPLE begins to evolve: flowing water moves through a stream hierarchy — flowing from one watercourse to the next, the watercourses gradually increasing in size, and ultimately always flowing into the ocean. Always moving and always transporting.

All of this has been mapped out in a few different formats. The best is *The Natural Drainage Basins In Connecticut Map*. It is available in two different scales, both of which have the same information. This map will show you 404 named and delineated drainage basins which will enable you to establish what basin you are in for any point in the state — and where the water comes from and ultimately flows to.

Each of the basins is identified numerically, and cross-referenced on the margin. The mouth of each basin is

MAJOR DRAINAGE BASINS IN CONNECTICUT

- 1 Pawcatuck Major Basin
- 2 Southeast Coast Major Basin
- 3 Thames Major Basin
- 4 Connecticut Major Basin
- 5 South Central Coast Major Basin
- 6 Housatonic Major Basin
- 7 Southwest Coast Major Basin
- 8 Hudson Major Basin



indicated by an arrow.

We have seen that water flows down the hillsides that define the drainage basin. Trickling downslope, the trickles form tiny streams which continue down slope and converge with other streams to form a larger stream at the base of the hills.

Once at the bottom of the basin, the water flows to the lowest point, and exits the basin at the mouth. From there, it flows into a larger stream or river and continues thus into progressively larger streams until the biggest of them empties into Long Island Sound.

The Natural Drainage Basins In Connecticut Map is available at two different scales. Both show the 404 different basins of the three primary types (major, regional, and subregional). One is at a scale of 1:250,000, measures 22 inches by 30 inches, and costs \$3.00. The other has a scale of 1:125,000, is about 44 by 55 inches, and costs \$7.50.

To order, please include state sales tax of eight percent and \$2.00 for handling per order (not per item). Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106.



The Daniel Benton Homestead has been meticulously preserved as a museum by the Tolland Historical Society. (Photos by the author.)

A Night at the Benton Place

by
Stephanie M. Speziali
Writing Intern
University of Connecticut

THE DANIEL BENTON HOMESTEAD, meticulously preserved as a museum by the Tolland Historical Society, was built in this quiet, idyllic Connecticut town in 1720. The full Cape Cod is surrounded by stone ledges, shrubs, and trees — dogwood, magnolia, forsythia, and pine. A sycamore stands guard in front. There is a picket fence and the house is surrounded by lawns, gardens, and footpaths that lead from the front door to the east and west sides of the long, red ell in the rear.

I went there for the first time to meet Barbara Palmer, chairwoman of the Tolland Historical Society. Her cheerful welcome put me immediately at ease. I told her I was thankful for the opportunity to visit the Benton Homestead days before the official opening.

Together we went inside to fold up the coverings that had been draped over the antiques. Each room, each article, tells its own story of the successive generations of occupants. Miss Florrie Bishop Bowering bought the homestead when the last of the Benton descendants (Miss Agnes

Chapin, great-granddaughter of Daniel Benton III) died in 1933. Hand-hewn beams and lintels, blackened by age and smoke, old chests, a rope-style bed, original wainscoting, panelling, and sheathing all reach back to other times.

There are Victorian furnishings in the parlor, colorful, glass lamps, a melodeon, matching sofa and chairs, fine china, and majolica and wedgewood plates. There is an old musket, a pair of 150-year-old German ice skates, mammy bench, flax wheel, school desk, spectacles, quill pen, cobbler's bench, railroad and ship's whale oil lamps.

There are original iron cooking utensils, strap hooks of various design, inkwells, tinware, candle molds, wine bottles, pewter, and crockery.

The stone floor of the basement has been made smooth by the steps of Bentons and mercenary Hessian officers, quartered here after surrendering at the Battle of Saratoga. On the rafters are now-undecipherable scrolls believed to be carved by these prisoners before they were shipped back to Germany. The basement fireplace is large,



The foundation and fireplace at the Benton Homestead support a home that has endured for over 250 years.

with a bake oven in the back. The foundation and fireplace support a home that has endured for over two-and-a-half centuries.

The late Miss Bowering had plumbing, heat, electricity, and a telephone installed during her 35-year occupancy, but she was insistent that neither altered the appearance nor disturbed the integrity of the Benton Homestead.

There are also two graves in the west yard.

MY ASSIGNMENT was to stay here overnight, and write about it. Mrs. Palmer and I parted, to meet again a few hours later when I brought my friend John. She turned over the keys, convinced that the homestead was in good hands. She said she would return at 9 a.m. the following morning.

John and I anticipated a quiet evening. Both of us were thrilled to be involved in the project. However, John became a little apprehensive about the two graves.

The graves belong to Elisha Benton and Jemima Barrows. Elisha, grandson of the first Daniel Benton, who was granted 40 acres of Tolland land in February of 1719 by his father Samuel, fell deeply in love with Jemima Barrows. The two were engaged, but the Benton family vowed that the marriage would never take place. Perhaps it was because Jemima was 12 years Elisha's junior or because she was "beneath" him socially — the exact reason is lost to history. Shortly after, Elisha enlisted in the Revolutionary Army.

Elisha returned from the war wracked by smallpox, a highly contagious and often fatal disease. Only survivors of smallpox acquire immunity to the disease and none of the Bentons at the homestead had ever contracted it. Jemima insisted on caring for the dying soldier, knowing that she would very likely be stricken; the family approved.

The two were confined to the "dying and burning room." Within a few weeks, Elisha died, age 29, on January 21, 1777. (He was, in fact, the third of Samuel's great grandsons to die of smallpox as a direct result of British incarceration.) The body was carried through a window

onto the west lawn and buried.

Jemima Barrows also succumbed to smallpox on February 28, 1777, just before her 18th birthday. The Bentons decided to inter her body only a few yards away from Elisha's; the two could not be buried together because of contemporary burial customs concerning unwed couples. Even then, they were separated by the carriage drive — apart in death as in life.

JOHN AND I RETURNED from the graves to the house. He sat down to read at the dining room table while I went out to take more pictures of the house; dusk created delicate, sweeping shadows on the west side which would make interesting photos.

I spent 10 or 15 minutes trying to force a generally very reliable camera to focus, flash, and advance. Only a couple of close-ups of the windows and doorway of the ell were successful. I was not too disappointed, since I had taken several pictures of the west side during my afternoon tour.

I went inside to make a hot cup of tea. I searched for a hotpot I thought I had packed, but soon realized that I had forgotten it. Then, we lost track of the homestead keys, finally finding them in the back seat of my car. They must have slipped back there while unpacking. These events — the camera, the hotpot, the key — were annoying and frustrating.

By 9 o'clock, we had settled in. The house was silent; we could almost hear the electricity running through the wires which lit the few lamps we knew how to turn on.

At that time, I had not yet seen the upstairs, usually off-limits even to Historical Society hosts, but Mrs. Palmer had given us permission to explore. Up the narrow stairs we crept with our flashlights. The first rooms were small and very plain, probably used for storage. It looked like some squirrels had stored their corn cobs and grasses in the rafters. Down the hall, I opened a door to the last room. Suddenly, the air became tight, as if my breath had been pulled out of me. John and I went downstairs. We both felt something eerie.

Returning to the dining room table, we lit a red, glass-encased candle I had brought along. All that was missing was some tea, so I called a girlfriend nearby to bring over a hotpot. While giving her directions, we were disconnected. I called her back. We reassured ourselves that neither of us had done anything deliberate.

Tanya arrived at 9:30 with a mutual friend and a hotpot. How good to see them. The girls asked for a quick tour. Upstairs, the girls experienced "vibes" in the same room John and I did. I showed the girls the front hall closet in which several of Miss Bowering's gowns were still hanging. Suddenly, a loud wail shattered the already tension-filled silence. It came from upstairs and sounded distinctly like the shrill outcry of a woman. We looked at each other in terror. The girls left right away. I felt that John wasn't going to stay much longer.

John and I nervously joked about Jemima walking the halls. In fact, I began to feel a deep sense of guilt for

disturbing the privacy of this place. I walked into the front bedroom and I said, "I'm sorry." I wasn't sure why I said it, and less sure to whom. John and I felt unwelcome and uncomfortable. We were intruders here.

We thought we heard more voices upstairs. Bats in the chimney? Moving about the house became less appealing; sleeping, impossible. We felt confined to the dining room. I stared out of the east windows of the ell. A few feet away, a woman in a long, light grey dress drifted by without looking in. I thought it must be a curious neighbor, since they had been told of our stay. But why didn't she look in? Once I told John of this, he wanted to leave. Could it have been a distortion caused by the ripples, bull's-eyes, and "strings-o-beads" imbedded in the original window panes?

The phone rang at exactly midnight. Tanya was calling, concerned about us. Again we were disconnected. John asked to go home and Tanya offered to replace him. I couldn't imagine staying here alone, although I had originally planned to.

For an anxious half hour, we awaited Tanya's arrival; we heard patterns of footsteps upstairs that grew loud and frequent. We were cold. Scared. At 12:30, a friend dropped off Tanya and picked up John. John the most sober, rational person I know, could take no more.

ALL WAS QUIET FOR A WHILE, with the exception of faint creaking and cracking that occurs in most houses. Squirrels scurrying across the long, wide ceiling beams were welcome friends. Tanya and I played "hangman" on paper napkins. We talked contently. I began to feel waves of nausea, and pulsing fatigue.

It was 4 a.m. I had an urge to look through the doorway of the dining room into the keeping room. The tail end of a long, light grey skirt swept quickly into the parlor hallway. I rushed to see more, but there was nothing there. When I told Tanya, I thought she would ask to leave, too. To my great surprise, she said that she had observed something similar, 20 minutes earlier, in the west yard. Was this the legendary Jemima?

We continued to chatter nervously, if only to keep contact with each other. Again, we heard what sounded like crying coming from upstairs. Then we heard conversations in the basement directly below us. It sounded like men. We called up a male friend. He groggily told us not to worry and hung up. We were right then tempted to jump in the car and leave, but we somehow stayed. We burst into hysterical laughter.

We regained our composure, comforted by the growing light outside. When it was light enough to take pictures, Tanya and I moved freely about the house, despite the sound of heavy footsteps above, commotion in the basement, and faint voices which continued periodically. After photographing the rooms, we cleaned up and packed our belongings before going out to photograph the grounds. Back inside, Tanya jokingly yelled out, "Good morning," and we heard three loud knocks above us. A final surge of panic twisted through me.

I then called Barbara Palmer to come lock up so Tanya and I could leave. We waited in the keeping room. Mrs. Palmer arrived just before 9 o'clock with open arms and a bag full of homemade blueberry muffins. Tanya excused herself and sat in the car, anxious to leave, while I recounted the events that had taken place.

UP TO THAT TIME, I had refrained from reading about unusual occurrences in the Benton Homestead. Beyond the story of the separation of Elisha and Jemima, I knew only of the home's basic history, occupants, artifacts of interest, and traditional construction.

The shape of things began to change as I read through some background material given to me by Mrs. Palmer. Over the years, various occupants, guests, and guides have reported a wide variety of mysterious happenings. Voices. Footsteps. Knocking. A range of inexplicable noises. Some have felt "vibes" upstairs and in other rooms of the house. Others have reported upon ghostly manifestations, usually associated with Jemima Barrows. In recent years, people have also experienced difficulty while photographing the west side of the house.

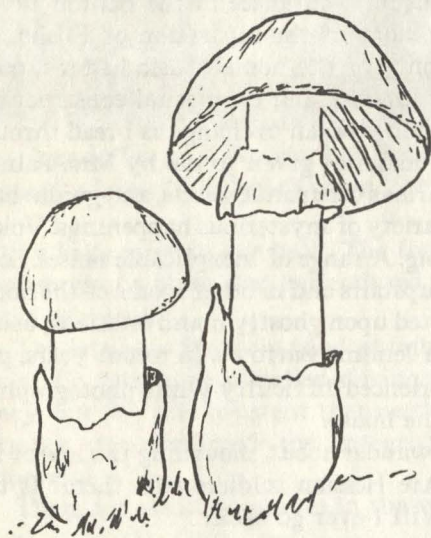
Does Jemima wander about, mourning the loss of her beloved Elisha? Are Hessian soldiers still there? Is this house haunted? Will I ever go back?

I suppose there's a ghost of a chance. ■

(The Benton Homestead is open to the public on Sundays, 1:00 to 4:00 p.m., May through October, and by appointment. For further information, call (203) 875-7559.)



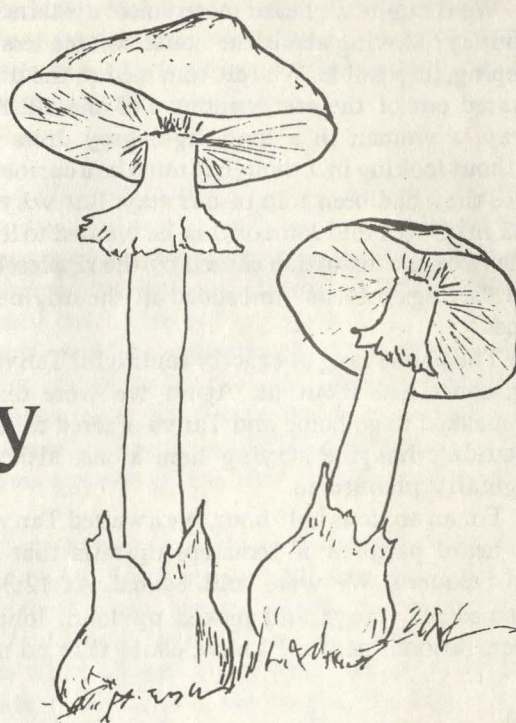
Shoes of a former resident of the Benton Homestead where, from time to time, unusual occurrences are reported.



Death Cap

A Deadly Bouquet

by
Gale W. Carter
Illustrations by
Pamela Carter



Destroying Angel

IT WAS A PLEASANT spring day and I was attending a mushroom foray to learn more about the much sought-after edible morel. One mushroom hunter collected, along with his morels, a large false morel (*Gyromitra esculenta*) with its cap looking like the convolutions of the human brain. My interest was sparked when I learned that under certain conditions it can be very poisonous because it contains a substance that is the same as a fuel propellant used to launch rockets. What aroused my curiosity was that the mushroom's species name, *esculenta*, means "edible." I learned that some people eat this mushroom with no particular qualms. This puzzled me enough to want to know more about this mushroom and others that are poisonous. Thus began my quest to learn about poisonous mushrooms and their toxins.

THERE ARE ABOUT 5000 species of fleshy mushroom in

the United States. They vary in size, shape, and habitat. There is a great diversity in edibility. A large number are inedible because they are either tasteless, bitter, too tough or too small to justify collecting.

There is a growing number of fungophiles (mushroom lovers) who are out there looking for some of the 100 species of edible mushrooms in North America that might be classified as a gourmet's delight. The information I was able to gather about poisonous mushrooms may act as a cautionary measure as you search for that special specimen for your cooking pleasure.

THE VAST MAJORITY (90 percent) of mushroom poisonings are caused by eating one group of mushrooms — the *Amanitas*. Many of the deaths reported for this type of poisoning involved children under five years of age, however.

The general characteristics of the *Amanitas* are:

- The presence of a universal veil that envelopes the developing mushroom. Bits of this veil appear as warts or patches on the cap of the mushroom of some species after the mushroom has erupted from its sac.
- The gills under the cap vary from white to pale-colored, depending on the species.
- White spores are released from the gills underneath the cap.
- Many species have a partial inner veil that extends from the margin of the cap of the developing mushroom to its undersurface. Remnants of this veil appear as a ring, or skirt, just below the cap in many *amanitas*.
- Usually, the presence of a volva. This is the swollen basal remains of the universal veil after it has been broken.
- The button or immature stage of the *amanita*, when the developing mushroom is still enclosed by the

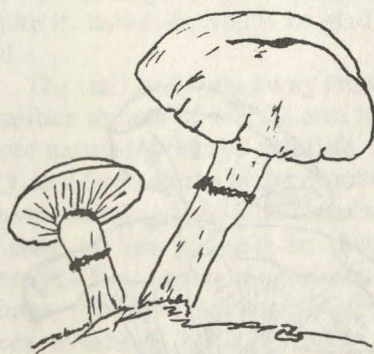
universal veil, may resemble a puffball, which is edible.

THE DEATH CAP (*Amanita phalloides*) and one of the destroying angels (*Amanita virosa*) are two of the most deadly mushrooms.

The death cap is a European species, but is beginning to show up in eastern United States. It is found growing under both conifers and deciduous trees.

Typically, the cap of the death cap is green, but it varies from greenish-brown to greenish-yellow. There is a white skirt-like ring just below the cap. Its smooth white-to-greenish stalk enlarges toward the base, connecting with a sac-like volva. This species is foul smelling.

Amanita virosa may be found growing under trees on the ground or in grass in mixed woods. It has a beautiful white cap. Just below the cap there is usually a tattered ring. The stem is taller and thinner than the death cap. It may vary from cottony to shaggy.



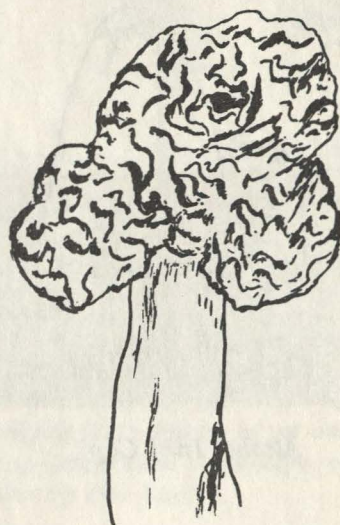
Deadly *Galerina*

Both of these mushrooms contain amatoxins, and only a few spoonfuls of either mushroom will kill. The symptoms of the poison do not usually appear until about 10 hours after consumption. This takes the form of digestive disturbances, then there is improvement followed by remission as the toxin attacks the liver and kidneys. Death may occur in about five to 10 days if there has not been prompt treatment. There is no known certain antidote for this type of poisoning, but there have been some promising treatments in recent years.

THE DEADLY GALERINA (*Galerina autumnalis*) is another mushroom that contains the same dangerous amatoxins found in the *Amanitas*. The species name, *autumnalis*, refers to the time of year when it was first collected; however, it is also found in the spring. It is found on coniferous or deciduous wood that may be buried or decayed. This is a small species with a dull brown, smooth cap of from one to two and a half inches that starts out convex, then becomes flat with a small knob in the center. The gills are yellowish but turn to rust. Its hollow one- to four-inch stalk may become enlarged toward the base. There is a skimpy ring just below the cap. The spores are brown.

This species is sometimes confused with the honey mushroom, which is edible, and has white spores. The cap of the honey mushroom often has dark hair-like scales as opposed to the smooth cap of *galerina*.

THE FALSE MOREL (*Gyromitra esculenta*) is another potentially dangerous mushroom, depending on the circumstances. It is a species often found in the spring growing under conifers. They may appear singly or scattered, or in clumps. The one-and-a-quarter to two-inch cap of this mushroom is brown and smooth at first but



False Morel

later becomes wrinkled and convoluted. Its interior is chambered as compared with the morels that are hollow. The one-quarter to two-inch white stalk is hollow and may be fluted.

Some false morels can attain a weight of several pounds.

The false morel contains a toxin called Gyromitrin that breaks down to form MMH (Monomethylhydrazine), a substance used in the U.S. space program as a fuel propellant. The effects of eating this mushroom vary with the individual. Some people show no effects from eating it, while others do. Sometimes one batch will poison and another won't. There are those who have even become ill from inhaling the fumes while it is being cooked. *Gyromitra esculenta* is widely used as an edible in Europe and in some places in the United States. There appears to be a very narrow margin in which MMH shows no effect whatsoever or it causes sickness and death.

The symptoms of poisoning are similar to the Amatoxins, but they ap-



Alcohol Inky Cap

pear much sooner, usually within six to eight hours. In difficult cases there are convulsions, coma, and death.

There is a low death rate from *Gyromitra esculenta* poisoning because many people boil the mushroom for an extended period and they discard the liquids. However, even this practice does not always remove all of the toxins.

OF ALL THE VARIETIES of inky cap, *Coprinus atamentarius* is the only kind that is poisonous, and unpleasant reactions occur only to someone who eats the mushroom and drinks alcohol afterwards. These inky caps look like partially opened umbrellas sticking up through the grass.

This is chiefly a fall species, often found growing scattered or in dense clumps. It is sometimes referred to as a "suburban" mushroom because it is found growing in vacant lots, on lawns, and at the base of old stumps.

Typically, it has a gray to brown bell-shaped cap. There may be some slight remains of the universal veil on the cap. The gills are inky black. It has black spores and its stem is white, fibrous, and hollow. At maturity, the

cap dissolves into a black inky fluid. The toxin that causes *Coprinus* poisoning is called Coprine. It interferes with the process in which the liver breaks down alcohol. Those who are adversely affected by combining the eating of this mushroom with alcohol consumption feel the effects quickly—within 10 to 30 minutes. There is usually nausea and vomiting accompanied by rapid heart beat and light headedness, and arms and legs tingle. There may be a flushing of the face and neck, a metallic taste is present, and the hands seem to be swelling. All these symptoms usually subside in from one-half hour to two hours. The recommended treatment is to keep the patient calm until the symptoms pass.

THE COLORFUL jack o'lantern (*Omphalotus olearius*) mushroom is an example of a type that causes gastro-intestinal disturbances. The symptoms of poisoning appear soon. There is nausea, vomiting, and diarrhea, but this does not last very long. Full recovery takes place in a day or two.

The jack o'lantern has an orange to yellowish cap and sharp-edged gills that extend down its stem. It is one of the mushrooms that glow at night. It grows in clusters at the base of stumps or on buried roots of oak and other deciduous trees.

The jack o'lantern is sometimes confused with the edible golden chanterelle (*Chanterellus cibarius*), but chanterelles have blunt-edged ridges in place of gills and they are not luminescent at night.

FINALLY, there are many more mushrooms that may be poisonous under certain circumstances, particularly those that cause gastro-intestinal disturbances. Even edible mushrooms may produce adverse reactions in some people.

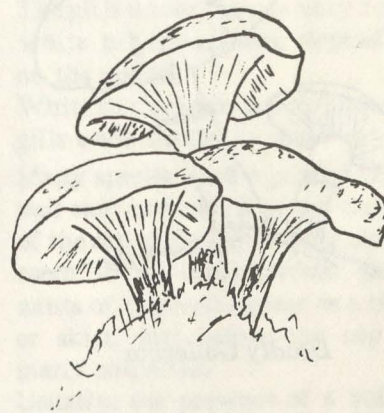
The progress made in treating mushroom poisoning has been very impressive in the last 30 years, al-

though there is still much for us to learn. Few people now need to die if they get prompt treatment, even if there is still no certain antidote for some of the types of poisoning.

There are many old wives' tales about how to tell which mushrooms are poisonous; e.g., a silver spoon blackens when placed in water with a poisonous mushroom but will not tarnish if the species is safe to eat; or that mushrooms with skin that will peel easily are edible (there are both poisonous and edible types that will peel easily). The most significant safeguard is to be cautious with selected specimens, being sure they are accurately identified. As David Arora says in his book *Mushrooms Demystified*, "When in doubt, throw it out."

Be sure to take only mushrooms that are in good condition or that have not been sprayed with pesticides. Lead poisoning from the exhaust of automobiles may occur in those that grow near highways.

Alexander Smith, author of the *Mushroom Hunter's Field Guide*, said it well: "There are old mushroom hunters and there are bold mushroom hunters, but there are no old, bold mushroom hunters." ■



Jack O'Lantern



On a clear day, you can see for 50 miles from Heublein Tower. (Photo by Jessica Medoff.)

Talcott Mt. State Park

by
Jessica Medoff

THE TRUTH IS, the mile and a half hike up Talcott Mountain to the Heublein Tower demands a little better than average endurance. If you can make it, however, you'll be glad you did.

The trail leads you away from the familiar sounds of traffic and into a more natural world of wildlife, geology, and flora. In the midst of rustling leaves, chirping birds, and clean air, it is easy to lose yourself in thought. Here you find a quiet, simple beauty to things — the towering canopy of birch trees overhead, or a decaying tree stump covered with woodpecker holes. The forest includes hemlocks, oaks, maples, and pines.

About a mile up, the hiker gets a first glimpse of the countryside below. From a ledge of traprock, there is a breathtaking view of Farmington Valley. This ledge, along with the rest of Talcott Mountain, is traprock. The cliffs were cut out by the glaciers, and

range in height from 500 feet to 1000 feet above sea level. After gazing over the farmlands, churchtops, and miles and miles of trees, you continue your half-mile trek to the top. And then, finally, the Tower itself.

The Tower was built in 1914 by the Heubleins as a summer retreat. It changed hands twice and was then sold to the state in 1965. It was renovated by the state and opened to the public in 1969.

Then there is the last climb up the 10 flights of stairs, a small sacrifice for the spectacular 360-degree panoramic view of the central portion of the state. On a clear day, visibility can be up to 50 miles.

Talcott Mountain is located three miles south of Simsbury on Route 185. Activities include picnicking, hiking, scenic vistas, hang-gliding (for members of the Connecticut Hang Gliders Association only), and observation tower. Available services are picnic shelter, outhouses, flush toilets, parking at trailhead. Charge: None.

Shenipsit State Forest

by
Timothy Loftus

WHERE CAN YOU HIDE 6000 ACRES of hilly forestland in north central Connecticut? A good place might be off Route 190 on the Somers-Stafford town line. You could call it Shenipsit State Forest. No one would ever be able to find it.

But people can find it and people do use it — for a wide array of recreational adventures. Hiking, mountain biking, trail running, motorcycle enduro racing, youth group camping, horse-back riding, hunting, and even commercial logging are all done periodically somewhere in the vast forest.

So, with all that going on, how can it be that a soul-searching walk or quiet picnic can be so peaceful?

The answer lies in Shenipsit's heavily wooded hills and winding trails which combine to form separate



Shenipsit State Forest is yet another one of Connecticut's well-kept secrets. (Photo by Tim Loftus.)

hidden groves, secret forest glades, and only yards apart. Walking a trail in the forest can mean passing a fellow hiker and immediately turning to no longer see him.

If walking the trails provides solitude and introspection, standing on the 1075 foot peak of Soapstone Mountain gives you a chance to survey the outer world. The hectic, congested central lowlands along the river seem slower and calmer from atop the summit fire-tower.

Part of the simple charm of Shenipsit is that the hills are just hills, barely cresting at 1000 feet; the trees are beautiful, but not giants; water appears as mountain runoff rather than cascading streams; and acres are counted by the hundreds or thousands, not the millions. But it does offer densely populated Connecticut a small piece of accessible woodland — and that, perhaps, is one of its greatest values.

To get to Shenipsit State Forest, take Route 190 east out of Somers. At the blinking light, as you start to climb into the uplands, take a right on Gulf Road. One and a half miles up is Soapstone Mountain Road on the right and the southern end of Sodam Road on the left. A third entrance is on Route 190, a few miles beyond the blinking light, on the right, at the northern end of Sodam Road.

DEP Acquires 740 Acres

"A red-letter day for Connecticut," said Governor William A. O'Neill. "A landmark in the conservation of Connecticut natural heritage," said DEP Commissioner Leslie Carothers.

The governor and the commissioner were announcing the approval of two land acquisitions by the state Bonding Commission. Together, these acquisitions total 740 acres of prime recreational land — about 400 in Trumbull and 340 in Lebanon.

"The Pequonnock Valley in Trumbull is one of the most beautiful pieces of untouched land in Fairfield county," Governor O'Neill said. He added that the Red Cedar Lake property includes a 140-acre lake and nearly 200 acres comprising the entire eastern side of the water body. "It gives us vitally needed inland swimming and a fine new park in Eastern Connecticut," he said.

According to Carothers, the cost of the land is reasonable. The Red Cedars price tag is \$2.9 million. In Trumbull, land valued at \$14 million will be acquired with \$5.7 million from the state, and \$4.1 million from the town of Trumbull.

The Trumbull piece is being sold by the Bridgeport Hydraulic Company. Months of negotiation among state,

town, and water company officials preceded the sale.

"We owe a great deal to the citizens of Trumbull," Carothers said. "They saw the value of this beautiful natural area and were willing to pay the price to keep it open."

The commissioner also complimented Bridgeport Hydraulic company on its patience and willingness to lower the price so the valley could be preserved.

The two acquisitions comprise a major pledge to commit as much as \$100 million to acquire critical Connecticut open space and expand town recreational resources.

Both areas scored high on the DEP rating scale for potential acquisition. The Pequonnock Valley was rated at the top of the scale for urban green space and nearly as high for wildlife and fishing access. Red Cedar scored highest in the forestry category, as well as for its swimming potential. Both areas are believed to provide habitat for uncommon species of wildlife.

Harvest Celebration

A Harvest Celebration will be held in the Outdoor Algonkian Indian Village on Saturday, October 14, 1989, at 1:00 p.m. at the American Indian Archaeological Institute, Curtis Road off Route 199, Washington, Connecticut.

Throughout the summer, gardens large and small continuously offer up the fruits of the earth. As Fall approaches, Mother Earth begins to prepare the plant life for a well-deserved rest. In observance of these changing seasonal cycles and the foods enjoyed from the "Three Sisters" garden at AIAI, the Education Department is planning a series of activities to celebrate. There will be native games, songs, dances, story-telling, and films. A Mayan Indian family from Guatemala will share some of their traditional Harvest Celebration music

as well as demonstrate the traditional backstrap weaving so well known in their country. Corn soup and black birch tea will be served. October is more than just the month of falling leaves. Come join in our celebration.

The program fee of \$5 for non-members and \$4 for members and children includes all museum privileges.

For further information, please phone (203) 868-0518.



Rails to Trails

On Saturday, October 21, the Connecticut chapter of the Appalachian Mountain Club is sponsoring its annual Conservation Day at the Third Congregational Church in Middletown. This year's theme is "Rails to Trails." During the day, several hikes and other outdoor activities will be offered on abandoned railroad beds throughout the state. At 6 p.m., a potluck supper will be held at the Third Congregational Church in Middletown, followed by a presentation on "Rails to Trails." The speaker will be Wilma Frey, Northeast Regional Field Coordinator for the "Rails to Trails" Conservancy.

The "Rails to Trails" Movement is spreading rapidly nationwide. Since its inception on February 1, 1986, the "Rails to Trails" Conservancy converted 210 railroad beds to trails, totaling over 2700 miles in 34 states. The Appalachian Mountain Club welcomes you to participate in this increasingly popular national environmental phenomenon. For more



information, please contact Don Paterson, 85 Old Town Road, #11, Vernon, CT 06066; or call (203) 871-8753. ■

Environmental TV Series

The new and informative television series, *Environment*, produced by Sandra Sprague of WPL-TV in Wallingford, will continue to air on public access channels in a number of areas in Connecticut. The series is hosted by Bob Paier, editor of *Connecticut Environment* magazine, and guests are members of Connecticut's environmental community — environmental professionals, public officials, scientists, biologists, and concerned citizens.

Be sure to watch the following programs:

"Inland Wetlands": Douglas Cooper, of the DEP's Water Resources Unit, explains why we must preserve these valuable areas. Week of October 9: MWF 8:00 p.m.

"Connecticut Recycles": State Recycling Coordinator Kim Marcy discusses the solid waste crisis and what we must do about it. Week of October 16: MWF 8:00 p.m.

"Urban Forestry": Extension Forester Jeffrey Campbell tells how the trees in the cities are essential to our well-being. Week of October 23: MWF 8:00 p.m.

"Household Hazardous Waste": The DEP's Leslie Lewis shows how to safely dispose of the hazardous materials that are in your basement and garage. Week of October 30: MWF 8:00 8:00 p.m.

"Wintering Eagles": Wildlife Biologist Rita Duclos explains how a

winter population of bald eagles reflects environmental change. Week of November 6: MWF 8:00 p.m.

Environment may be seen on Wallingford Cable 33; Telesystems (Meriden, Southington, Cheshire); and Valley Cable Vision (Ansonia, Derby, Shelton, Oxford, Beacon Falls, Seymour, Bethany, Naugatuck). ■



The Night Sky

October Skies

by
Francine Jackson

October. Just the word brings to mind so many images of fall — shorts and bathing suits replaced by sweaters and slacks, colors exploding from neighborhood trees, the sun no longer a glaring, sweltering blob.

For the scientific-minded, October might bring on other thoughts: for example, the October 4, 1957 launch of Sputnik I, an event so memorable — and so devastating to the U.S. at that time — that horror author Stephen King in his autobiography recalled where he was when he first learned of it (at the movies). This resulted, just one October later, in the creation of NASA, the agency that, in the ensuing decades has brought us live coverage from all the major planets except Pluto, the first steps on the moon, and the world's first recyclable spacecraft, the Shuttle.

One of the major jobs of the Space Shuttle will be to release craft previously launched from Earth. Fortunately, it has shown itself completely capable of doing this, especially as two astronomers' dreams are on the launch schedule — Galileo to Jupiter, set for this month, and the long-awaited Space Telescope, going up in early 1990.

Already on its way is Magellan, launched earlier this year. Its goal is Venus, the closest and brightest of our planetary neighbors. People often ask if we can see spacecraft such as Magellan with telescopes. Unfortunately, our answer is no, but we can see its destination, Venus, any clear evening this month with just the unaided eye. Simply go outside right after sunset, face southwest, and look for something that resembles an airplane with its lights on. You'll notice it won't move around the sky like a regular plane, but instead will simply saunter toward the horizon with the passage of time. If you have binoculars or a small telescope, you may notice that Venus and Mercury are the only two

planets that exhibit phases, just as the moon does. Right now, Venus is in a "first quarter" phase.

Because Venus is so bright, some people claim they can see it in the daytime. If you want to try to find it, please be very careful — remember, Venus is always relatively close to the sun, so use caution, especially if you are using binoculars or a telescope. ■

Endnote

"We are an experiment, to be followed by other experiments without end. But love and truth, present for a while in one such experiment, testify that it was more than that. A word of eternity was spoken."

Karl Jaspers



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